Amended Claims

1. (Currently Amended) A method for protecting digital samples of content from illicit use by scrambling the content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits (MSBs), comprising the step of:

scrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding scrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said scrambling step, the number of LSBs are scrambled between different samples using inter-sample scrambling.

2. (Original) The method of claim 1, comprising the further step of:

determining a dynamic range of each sample; and
adaptively selecting the number of LSBs to be scrambled in each sample according to the dynamic range thereof.

3. (Original) The method of claim 1, wherein the samples are provided in successive frames, comprising the further step of:

adaptively selecting the number of LSBs to be scrambled in each sample according to the frame thereof.

4. (Original) The method of claim 1, wherein:

said scrambling key is a pseudo-random scrambling key.

5. (Original) The method of claim 1, wherein:

in said scrambling step, the number of LSBs are scrambled within the same sample using intra-sample scrambling.

6. (Cancelled)

7. (Currently Amended) ~~The method of claim 1, wherein:~~ A method for protecting digital samples of content from illicit use by scrambling the content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits (MSBs), comprising the step of:

scrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding scrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said scrambling step, the number of LSBs are scrambled between different samples, and within the same sample, using inter-sample and intra-sample scrambling, respectively.

8. (Currently Amended) ~~The method of claim 1, wherein:~~ A method for protecting digital samples of content from illicit use by scrambling the content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits (MSBs), comprising the step of:

scrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding scrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said scrambling step, the number of LSBs are scrambled between different samples using horizontal inter-sample scrambling by interchanging bits having the same weight.

9. (Original) The method of claim 1, comprising the further step of:

embedding the scrambling key, at least in part, into the scrambled samples for use at a decoder in descrambling the scrambled samples.

10. (Original) The method of claim 9, wherein:

the scrambling key for a current frame of scrambled samples is embedded, at least in part, into a previous frame of samples.

11. (original) The method of claim 9, wherein:

the scrambling key for a current frame of scrambled samples is embedded, at least in part, into a current frame of samples.

12. (Currently Amended) A method for descrambling previously scrambled digital samples of content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits (MSBs), comprising the step of:

descrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding descrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said descrambling step, the number of LSBs are descrambled between different samples using inter-sample descrambling.

13. (Original) The method of claim 12, comprising the further step of:

determining a dynamic range of each sample; and

adaptively selecting the number of LSBs to be descrambled in each sample according to the dynamic range thereof.

14. (Original) The method of claim 12, wherein the samples are provided in successive frames, comprising the further step of:

adaptively selecting the number of LSBs to be descrambled in each sample according to the frame thereof.

15. (Original) The method of claim 12, wherein:

said scrambling key is a pseudo-random scrambling key.

16. (Original) The method of claim 12, wherein:

in said descrambling step, the number of LSBs are descrambled within the same sample using intra-sample descrambling.

17. (Cancelled)

18. (Currently Amended) ~~The method of claim 12, wherein:~~ A method for descrambling previously scrambled digital samples of content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits (MSBs), comprising the step of:

descrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding descrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said descrambling step, the number of LSBs are descrambled between different samples, and within the same sample, using inter-sample and intra-sample descrambling, respectively.

19. (Currently Amended) ~~The method of claim 12, wherein:~~ A method for descrambling previously scrambled digital samples of content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits (MSBs), comprising the step of:

descrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding descrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said descrambling step, the number of LSBs are descrambled between different samples using horizontal inter-sample descrambling by interchanging bits having the same weight.

20. (Original) The method of claim 12, wherein the scrambling key is embedded into the scrambled samples, comprising the further step of:

recovering the scrambling key from the scrambled samples for use in said descrambling step.

21. (Original) The method of claim 20, wherein:

the scrambling key for a current frame of scrambled samples is embedded into a previous frame of samples.

22. (Original) The method of claim 12, comprising the further steps of:

scrambling the scrambling key after descrambling the scrambled sample in said descrambling step.

23. (Currently Amended) An apparatus for protecting digital samples of content from illicit use by scrambling the content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits, comprising:

a scrambler for scrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding scrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said scrambling step, the number of LSBs are scrambled between different samples using inter-sample scrambling.

24. (Currently Amended) An apparatus for descrambling previously scrambled digital samples of content, wherein each sample includes a plurality of bits, ranging from least significant bits (LSBs) to most significant bits, comprising:

a descrambler for descrambling a number of LSBs in each sample according to a scrambling key, while preserving a number of MSBs in each sample, to provide corresponding descrambled samples; wherein:

a number of LSBs is scrambled in each sample such that the scrambled samples are degraded but still recognizable; and

in said descrambling step, the number of LSBs are descrambled between different samples using inter-sample descrambling.